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SOME ISSUES IN THE TEACHING OF HANDWRITING. I

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The purpose of this article is to present some of the most important issues of the pedagogy of handwriting, and to discuss the psychological processes which may be appealed to for their solution. Psychological analysis cannot finally determine practical questions of this sort. It can, however, define the issue and lead to conclusions which may then be tested by means of practical experiment in the schoolroom. The discussion, therefore, does not aim to give a final settlement of these questions, but rather to offer tentative solutions and to lead to practical school experiments.¹

I

The question in the pedagogy of writing which has been most widely agitated is probably that in regard to the slant of writing. A brief history of this agitation may be given.

Previous to the agitation for vertical writing which took place in the last quarter of the nineteenth century, rapid writing slanted, as a rule, to the right. There had been, it is true, some suggestions looking toward the adoption of vertical writing, but they did not have general influence until about 1875. What divergence there was, was due to an opposition between the aim of speed, which led to a slant in writing, and the aim of legibility without regard to speed, which led to a more vertical style. At about the time

¹ A more detailed account of the methods by which such practical investigation of writing problems may be made in the school will be published in a forthcoming number of the *Journal of Educational Psychology*.

mentioned, however, a number of physicians of Germany and France criticized the writing in the schools from the point of view of hygiene. In order to understand the basis of their criticisms we must realize that the pupil commonly took a position with his side toward the desk. This was held to cause curvature of the spine and eye-strain. The curvature of the spine was due to the fact that only the right elbow rested upon the desk, with the consequence that the right shoulder was lifted higher than the left. The eye-strain was due to the fact that the eyes were not at an equal distance from the writing, and that the lenses of the eyes had to be focused unequally.

In order to remedy these evils it was seen to be necessary to modify the position of the pupil at the desk, and it was concluded that this would require also that the writing be vertical. The demands of these investigators are well represented by the resolutions adopted by the Society of Public Medicine of France in 1879. This society recommended, first, that the pupil sit squarely on the chair, with the weight equally distributed, the shoulders parallel to the edge of the desk, and the back erect; second, that he preferably do not rest his elbows on the desk, but that if he does they should rest equally on the desk; third, that he should hold the paper in place with his left hand; and fourth, that vertical writing be adopted, but if not that the paper be inclined to the left to the same degree by which the writing inclines from the vertical. We see clearly then that vertical writing was regarded as a necessary consequence of the reform of the evils above mentioned.

It should be added that vertical writing has also been regarded as more legible than writing which has a slant, and as therefore preferably both from the point of view of the writer and of the reader. This consideration may be taken up separately.

The main arguments for vertical writing have been met in common practice by a modification of the position of the pupil at the desk. The pupil may sit directly facing the desk and still write either vertically or with a slant. The question of slant is to be decided not primarily upon the score of hygiene, then, but upon the score of ease and rapidity of movement and of the legibility

of the resulting writing. We may take up the question of ease and rapidity of movement first.

The hand writing movement is made up ordinarily of a combination of arm and finger movement. To what extent the arm movement should be used is open to discussion, but at any rate it should co-operate to the extent of carrying the hand freely along the line. This it cannot do with the paper in the position which is commonly used for vertical writing, that is, with the paper parallel to the edge of the desk. In this position it is necessary that the arm be continually drawn back in order to avoid running off the line. In order then to make use of this valuable element of the writing movement, it is necessary that the paper be tilted to the left so that the base line of writing is about perpendicular to the forearm.

We have next to inquire what this position implies as to the direction of the main downward strokes of the letters, or, in other words, the slant of the writing. The fourth recommendation of the French society offers the solution to this question. It is found by experiment that the most natural direction for a downward stroke is toward the body, that is, in a line perpendicular to the edge of the desk when the writer sits facing it. If now the paper is parallel to the edge of the desk the writing will be vertical, but if it is inclined to the left the writing will be inclined to the right to the same degree. We have then the slant of the writing determined by two factors, first, the direction of the easiest movement of the arm in carrying the hand along the line, which determines the position of the paper, and second, the most natural direction of the downward stroke, which determines the direction of the downward strokes with reference to the paper.

There is, however, another consideration which favors some slant in writing. It has been remarked that historically rapid writing always tended to have more or less slant. This is not due in the main to the relative position of the arm and the paper, as just described, since this in all probability was not uniform but to the fact that as writing becomes rapid the different strokes of the letters tend to assume the same or nearly the same direction. It may readily be seen that it requires a more radical adjustment in

the movement to make a succession of strokes alternating between a vertical stroke and one having a considerable slant than it does to make a series in which the downward stroke has a slant which is more nearly like that of the upward stroke. That is, the more nearly the successive strokes resemble each other in direction, the more quickly they can be made. Since the connecting strokes between the letters have a slant, naturally the downward strokes tend to approximate this slant.

It is evident that the question of legibility is intimately connected with this question of the relative direction of the upward and downward strokes. If the downward strokes incline so far as to have nearly the same slant as the upward strokes the different strokes become less easily distinguishable and consequently the writing becomes less legible. The maximum of legibility in so far as the directions of the strokes is concerned is attained by having a maximum difference in direction between the successive downward and upward strokes. This is attained by vertical writing and hence vertical writing is theoretically the most legible.

The theoretical advantage of vertical writing in legibility is not necessarily maintained in practice. It is an acknowledged truth that actual writing does not conform to the copy-book model. The degree of deviation from the theoretical model will depend to a large extent upon whether or not the writing conforms to the requirements for ease and rapidity of movement. Since vertical writing does not so conform it tends, when there is pressure for rapid writing, to depart from the model and to become illegible. One common way in which this happens is for the upward strokes, as well as the downward strokes, to be vertical and to be connected with the previous and succeeding downward strokes by semicircular curves. Thus the upward and downward strokes may here, as in writing which has a slant, approximate one another in direction, and the result for legibility is as disastrous in the one case as in the other.

The difference in the legibility between the theoretical model for vertical writing and for writing which has a moderate slant is not great enough to be of any importance. Writing only suffers

in legibility when the slant becomes extreme and this condition is not found in present-day writing.

The psychological analysis then justifies the practice, which has been adopted by the majority of schools, of teaching writing which has a moderate degree of slant. The change has taken place largely as a result of unsatisfactory experience with the vertical writing. Changes which are made in this way, however, have not the same guarantee of stability as changes which are made with the consciousness of the psychological basis which underlies them. It is therefore of importance to determine the reasons why vertical writing was unsatisfactory in practice, and why writing with a slant is satisfactory.

II

We have now to consider a group of questions in the teaching of writing which may be described in general as growing out of the issue between the analytic and the synthetic method. The analytic method consists in training different processes or capacities simultaneously, and the synthetic method refers to the procedure of training different capacities one at a time. An example of the difference between these two methods is found, for instance, in reading. The analytic method is the so-called word or sentence method, in which the child first learns the whole and then proceeds from the whole to the parts. The synthetic method starts with the individual letters or the phonetic elements, and from these builds up the words and sentences. This general distinction between analytical and synthetic methods appears also in the teaching of writing.

The first question in this connection is in regard to the relation between the training for habits of movement and training for the production of correct form. That is, should the teacher aim from the beginning to train the child in correct habits of movement, and at the same time to train him to produce letters which are legible and correctly formed? The alternative is to lay stress first upon one of these aims and then after the first has been attained to emphasize the second. The consideration in favor of maintaining both of these aims together is that thereby we avoid the waste which results from a repetition, and from the necessity of undoing

bad habits. That is, so long as the child is practicing, it would seem to be economical to require him to learn to use the best form of movement and to produce correct form at the same time. Economy, then, is the advantage of this form of procedure. On the other hand, this argument neglects the psychological conditions of learning. The child is capable of paying attention to only so much at once, and if we require him to distribute his attention too widely the result will be that he will neglect both elements of the task which he is performing. Accordingly, instead of training both the form and the movement at the same time, the result is that neither is thoroughly developed.

The problem then is reduced to the question of which component should be developed first, correct movement or form. The contention in favor of the prior development of the habit of movement is that the foundation of the habit should be laid early. By this means bad habits and the necessity of breaking them up will be avoided. The attention can afterward be given mainly to the perfection of the form of the writing. This argument when carried to the extreme leads to the use of strenuous movement drills from the beginning of the first grade up, and to the use of exactly the same kind of movement and the same writing materials throughout. The assumption underlying this practice is, further, that the acquirement of correct habits of movement is the main condition for the acquirement of legible writing. In other words, it is often assumed that legible writing will result without much attention being paid to the form when proper habits are trained. This assumption may be questioned, but it is not the place here to discuss it in detail.

The opposite procedure of paying chief attention at the beginning to the development of the form of the letters rests upon the facts which are known concerning the development of motor skill in the child. The facts at our command indicate that the child when he first enters school is very deficient in this respect. After two or three years his capacity for the acquirement of activities which involve skill and dexterity develops to a marked degree. If this is true, a given amount of drill undergone at the age of eight or nine will have a very much greater effect than the same

amount given at the age of six or seven. In other words, it would be a waste of time and energy to train the child in an activity for which he has not yet developed sufficient motor control.

Evidence in support of this position is found in an examination of the writing of children in the different grades, all of whom have had the same form of training. This training consists in a strenuous drill in arm movement. Such examination reveals the fact that the children of the first three or four grades have profited little by the drill which they have undergone, but between the fourth and the fifth or sixth grade there is a sudden transition. Movement drill here begins to have marked results in the child's writing. This is not due to the accumulation of the results of the past four or five years, since the children who are the subjects of this investigation had not had the movement drill more than one year.

It might be concluded from these considerations that writing should be deferred entirely until the child had acquired sufficient natural motor skill to make its learning economical, but this would entail too great a sacrifice in view of the importance of writing as a means of expression in connection with reading and the other school subjects. Furthermore, the child may during the early years develop the perception of the form of the letters so that he may later have a standard to which he can bring his writing when movement drill is introduced.

If movement drill is deferred until the child is in the third or fourth grade he will employ during the first years a relatively slow movement in which the finger movement is the chief component. This will necessitate a marked readjustment of the co-ordination when arm movement drill is introduced, and the form of the writing will temporarily suffer. The child's nervous system is still sufficiently plastic, however, to permit of readjustment of his motor habit, and the sacrifice of form is only temporary. The contrary procedure, in which movement drill is introduced in the first grade, involves a sacrifice of form for a much longer period. From the point of view of its effect upon form, therefore, as well as from the point of view of the development of the co-ordination, strenuous movement drill may well be deferred until the third or fourth grade.

[To be concluded]